

SCREENING FOR HYPERTENSION IN ADULTS

INTRODUCTION:

- *Definition:*
Hypertension is defined as a systolic blood pressure (SBP) of 140 mm Hg or higher or a diastolic blood pressure (DBP) of 90 mm Hg or higher (JNC VI, 1997)
- *Definition:*
Screening for hypertension in adults is the routine measurement of blood pressure in individuals 18 years and older with the goals of early disease detection and a decrease in hypertension-related morbidity and mortality.
- *Incidence:*
Hypertension affects more than 50 million Americans. Annually, it is associated with approximately 500,000 strokes and 1,250,000 heart attacks. It is a major risk factor for coronary artery disease, congestive heart failure, renal disease, retinopathy, ruptured aortic aneurysm and stroke. Current data has shown that only 27% of adults are controlled at < 140/90 mm Hg. Almost 50% of hypertensive patients are either unaware (13 million) or aware and untreated (7 million). Of those treated, 58% are uncontrolled.

Recent research suggests that Middle-aged Americans face a 90 percent chance of developing high blood pressure at some time during the rest of their lives (Vasan et al, 2002). It was also determined that the risk of developing severe degrees of high blood pressure has decreased in the past 25 years, due partly to improved treatment. Such findings underscore the importance of taking steps to protect patients against high blood pressure through screening and the encouragement of simple healthy behaviors.

- A. Essential Hypertension – no identifiable etiology, accounts for approximately 90-95% of hypertensives
- B. Secondary Hypertension – hypertension attributed to a treatable condition such as aortic coarction or renovascular disease.

PATHOPHYSIOLOGY:

- A. Essential Hypertension – no identifiable etiology.
Elevated blood pressure remains elevated because of an increase in peripheral arterial resistance that may be related to either of the following:
 - 1. Inappropriate renal retention of salt and water
 - 2. Increased endogenous pressure activity
- B. Secondary Hypertension – can occur in the following conditions as well as others:
 - 1. Polycystic Kidneys
 - 2. Renovascular disease
 - 3. Aortic coarctation
 - 4. Cushing's syndrome

5. Pheochromocytoma
6. Use of oral contraceptives
7. Chronic alcohol abuse

SUBJECTIVE ASSESSMENT:

- A. **HISTORY:** should focus on modifiable lifestyle factors to include weight gain, exercise, alcohol and tobacco use, and psychosocial stressors. Dietary considerations may include intake of sodium, calcium, magnesium, potassium and cholesterol. Patients should be asked about cocaine use and athletes should be asked about use of anabolic steroids.
- B. **SYMPTOMS:**
 - Frequent headaches
 - Visual impairment
 - Symptoms suggestive of target-organ damage: muscle weakness, leg cramps, nocturia, polyuria, dizziness, lightheadedness, syncope, dyspnea, palpitations, tachycardia, chest pain, diaphoresis, flank pain, visual or speech disturbances.
- C. **PAST MEDICAL HISTORY:**
 - Inquire about any past readings of elevated blood pressure
 - Significant for coronary heart disease (CHD), stroke, cardiovascular disease (CVD), diabetes, dyslipidemia, renal disease, gout, sexual dysfunction; thyroid, pituitary, adrenal gland disease.
- D. **MEDICATION HISTORY:**
 - Obtain a complete medication history including over-the-counter medications, herbal decongestants, appetite suppressants, oral contraceptives, cyclosporine, erythropoietin, tricyclic antidepressants and monoamine oxidase inhibitors.
- E. **FAMILY HISTORY:**
 - Note positive history for hypertension in family members, premature coronary heart disease, stroke, cardiovascular disease, diabetes, dyslipidemia, gout, sexual dysfunction. The existence of such history, particularly in family members who are females under age 65 or males under age 55 is a strong predictor of risk.
- F. **PSYCHOSOCIAL HISTORY:**
 - Evaluate for alcohol consumption, cigarette smoking, use of illicit drugs, occupation and recreation.
- G. **DIETARY HISTORY:**
 - Inquire about intake of sodium, cholesterol and saturated fats, and caffeine.

OBJECTIVE ASSESSMENT:

- A. **PHYSICAL EXAM:** in the case of an elevated hypertension screening measurement the physical exam should include confirmation of the initial blood pressure reading; height, weight and body mass index measurements; assessment of the patient's general appearance; ocular fundoscopic examination; auscultation and palpation of the neck, heart, lungs, abdomen and extremities; and a neurological examination.
 - Blood pressure: 2 or more measurements separated by at least 2 minutes. These two measurements should be averaged, if they differ by more than 5 mm Hg, there should be additional measurements taken and averaged.
 - The patient should be seated in a chair with back supported, arms bare and

supported at heart level. No caffeine ingestion or smoking for at least 30 minutes prior to the measurement. The measurement should be taken after a minimum of 5 minutes of rest.

- The bladder within the blood pressure cuff should encircle at least 80 percent of the arm to ensure accuracy.
- Use of a mercury sphygmomanometer is preferred. A recently calibrated aneroid manometer or a validated electronic device may be used if necessary.
- Height/weight/BMI/general appearance: measurements should be recorded and used to help assess whether weight reduction is indicated as part of the management plan. Aspects of the patient's general appearance may indicate an underlying pathology (for example: moon facies, central obesity, and ecchymoses in a hypertensive patient may indicate the presence of Cushing's syndrome).
- Ocular fundoscopic exam: assess for changes associated with hypertension – arteriolar narrowing, hemorrhages, exudates, papilledema.
- Neck: examine for jugular venous distension, enlarged thyroid; auscultate for carotid bruits.
- Heart and Lungs: assess for abnormalities in heart rate or rhythm, clicks, murmurs, 3rd and 4th heart sounds, displaced PMI, precordial heave, pulmonary rales.
- Abdomen: examine for bruits, enlarged kidneys, hepatomegaly, masses, and abnormal aortic pulsation.
- Extremities: examine for strength/quality of peripheral pulses and assess for the presence of edema

B. DIAGNOSTIC PROCEDURES:

- Laboratory tests for a routine hypertension workup include a complete blood count (CBC), creatinine, glucose, potassium; a lipid profile; and a complete urinalysis.

C. ADDITIONAL TESTING:

- Specific patient presentations may warrant additional testing such as a 12 lead electrocardiogram and/or an echocardiogram. Other additional tests include but are not limited to uric acid, urine microalbumin, and serum calcium.

DIAGNOSIS:

Once a blood pressure reading has been confirmed, the patient's status may be classified as follows:

| <u>Category</u> | <u>Systolic</u> | | <u>Diastolic</u> |
|------------------------|------------------------|------------|-------------------------|
| Optimal | <120 | <i>and</i> | <80 |
| Normal | <130 | <i>and</i> | <85 |
| High-Normal | 130-139 | <i>and</i> | 85-89 |
| Hypertension | | | |
| Stage 1 | 140-159 | <i>or</i> | 90-99 |

Stage 2 160-179 or 100-109

Stage 3 ≥ 180 or ≥ 110

The Sixth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, Table 2

Stages 1-3 must be based on the average of two or more readings taken at each of two or more visits after the initial screening. If the systolic and diastolic readings fall into different categories, the higher stage should be utilized for classification of the blood pressure category.

These staging criteria are for individuals who are not acutely ill and not taking antihypertensive medications. They are not age-related other than as specified for the screening of those 18 years and older.

The screening measurement will also serve as a guide for a follow-up recommendation:

Initial Blood Pressure (mm Hg):

| <u>Systolic</u> | <u>Diastolic</u> | <u>Follow-up Recommendation</u> |
|-----------------|------------------|--|
| <130 | <85 | Recheck within 2 years |
| 130-139 | 85-89 | Recheck within 1 year |
| 140-159 | 90-99 | Confirm within 2 months |
| 160-179 | 100-109 | Evaluate or refer within 1 month |
| ≥ 180 | ≥ 110 | Evaluate or refer immediately or within 1 week depending on the clinical situation |

The Sixth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, Table 3

If the systolic and diastolic pressures fall into different categories, the shorter follow-up time should be utilized.

UNIQUE SCREENING CONSIDERATIONS:

Patients with diabetes should be treated to a therapy blood pressure goal of below 130/85 mm Hg.

Patients with renal insufficiency and greater than 1 gram per day of proteinuria should be treated to a therapy blood pressure goal of 125/75 mm Hg. Those with less proteinuria should be treated to a blood pressure goal of 130/85 mm Hg.

White Coat Syndrome:

White Coat Syndrome is a well-documented syndrome thought to be responsible for up to 20 to 50 percent of patients newly diagnosed with hypertension. It is defined as a hypertensive blood pressure in the office but a normal blood pressure with either home or ambulatory monitoring. In these persons the appearance of the sphygmomanometer or care provider is thought to give rise to stress or a conditioned fear response that causes an increase in blood pressure. In some cases, such a blood pressure response may persist for years despite familiarity with medical staff and multiple BP readings.

A recommended solution for this phenomenon is the use of home blood pressure monitoring. If the ambulatory blood pressures during waking hours average less than 132/83 mm Hg, but the patient's blood pressure spikes when measured in the office, current recommendations, although controversial, are to refrain from treatment with medication. Thorough documentation of blood pressure readings in home and office settings is needed to appropriately manage such a patient.

Home blood pressure monitoring:

The inherent inconsistencies of office measurement, white coat syndrome, and variations in blood pressure over the course of the day may lead to inaccurate determination of true blood pressure, especially in patients with borderline or stage 1 hypertension. Home blood pressure monitoring is becoming accepted as a reliable method of determining average blood pressure. The most widely accepted threshold of ambulatory hypertension is an average awake blood pressure of 132/83 mm Hg.

Home monitoring has also been found to improve patient compliance with blood pressure controlling regimens, with evidence displaying increased awareness, motivation, and compliance with lifestyle changes. Home monitoring is helpful for involving patients in their own management and provides a more complete picture of the patient's blood pressure patterns.

The algorithm for "[Screening for Hypertension in Adults](#)" is available at the web site of the Office of Quality and Performance for the Veterans Health Administration.

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